

AMENDMENTS TO THE CLAIMS

Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1: (Withdrawn): A mask comprising:
a base having a pattern formed on a surface;
a transparent member provided at the side of the surface of the base; and
a correction part for correcting a change in an optical path by the transparent member.

Claim 2: (Withdrawn): A mask comprising a correction part for correcting a
writing error of a pattern.

Claim 3: (Withdrawn): A mask comprising:
a base having a pattern formed on a surface;
a transparent member provided at a side of the surface of the base; and
a correction part for correcting a change in an optical characteristic due to a
transformation of the transparent member.

Claim 4: (Withdrawn): A mask comprising:
a base having a pattern formed on a surface;

a transparent member provided at a side of the surface of the base; and

a correction part, provided in the transparent member, for correcting a writing error of the pattern.

Claim 5: (Withdrawn): A mask comprising:

a base having a pattern formed on a surface;

a transparent member provided at a side of the surface of the base; and

a correction part for correcting a writing error of the pattern and a change in an optical characteristic due to a transformation of the transparent member.

Claim 6: (Withdrawn): A mask comprising:

a base having a pattern formed on a surface;

a dustproof transparent member at a side of a surface of a base; and

an aspheric surface provided at least one of planes of incidence and exit of light in the transparent member.

Claim 7: (Withdrawn): A mask according to claim 1, wherein said transparent member has a dustproof function, and the correction part has an aspheric surface.

Claim 8: (Withdrawn): A mask according to claim 6, wherein the aspheric surface is formed onto said transparent member at a side of the base.

Claim 9: (Withdrawn): A mask according to claim 1, wherein the correction part is formed by an aspheric surface formed by a mechanical process to transparent member's surface or formed by vacuum evaporation.

Claim 10: ((Withdrawn): A mask according to claim 3, wherein the transformation of said transparent member results from a transformation of transparent member's own weight and/or a stress generated when said transparent member is attached to a frame.

Claim 11 (Withdrawn): A mask according to claim 1, wherein said transparent member is attached to the base through a frame.

Claim 12 (Withdrawn): A mask according to claim 1, wherein the base and the transparent member are made of quartz or fluorite.

Claim 13 (Withdrawn): A mask according to claim 12, wherein the quartz is a fluorine doped quartz.

Claim 14 (Withdrawn): A mask according to claim 1, wherein said correction part is formed such that a ray emits to a proper optical path from each portion in the pattern.

Claim 15 (Withdrawn): A mask according to claim 1 , wherein said correction part is formed such that a distortion of an image of the pattern is reduced when the image of the pattern is projected by a projection optical system in an exposure apparatus when said mask is installed into the exposure apparatus.

Claim 16 (Withdrawn): A device fabrication method comprising the steps of:
exposing the pattern using a photosensitive body by using a projection optical system to project a pattern on a mask onto the photosensitive body, said mask comprising a transparent member at a side of a surface of a base, a pattern being formed on the surface, and a correction part for correcting a change in an optical path by the transparent member; and
developing the photosensitive body that has been exposed.

Claim 17 (Currently Amended): A projection exposure apparatus comprising:
a mask stage for installing the mask, ~~said the mask~~ including a substrate that has a pattern on one surface of the substrate, and a transparent member provided at the side of the one surface of the substrate, the transparent member having an aspheric surface comprising a transparent member at a side of a surface of a base, a pattern being formed on the surface, and a correction part for correcting a change in an optical path by the transparent member;
an illumination optical system for illuminating the mask; and
a projection optical system for projecting the pattern on the mask illuminated by said

illumination optical system, said mask stage and said illumination and projection optical systems being configured such that the pattern on the mask may be projected.

Claim 18 (Original): A projection exposure apparatus according to claim 17, wherein said illumination optical system uses light having a wavelength of 200nm or smaller to illuminate the mask.

Claim 19 (Original): A projection exposure apparatus according to claim 18, wherein the light is fed from an ArF or F₂ excimer laser unit.

Claim 20 (Original): A projection exposure apparatus according to claim 17, further comprising a mechanism for adjusting a symmetrical distortion of said projection optical system.

Claim 21 (Original): A projection exposure apparatus according to claim 17, further comprising a mechanism for adjusting a spherical aberration of said projection optical system.

Claim 22 (Currently Amended): A projection exposure apparatus according to claim 21, wherein the adjusting mechanism reduces ~~a correction amount for~~ a spherical aberration due to the transparent member.

Claim 23 (Original): A projection exposure apparatus according to claim 17, wherein said projection optical system is a telecentric optical system at both object and image sides.

Claim 24 (Currently Amended): A projection exposure apparatus according to claim 17, wherein said transparent member has a dustproof function, ~~and the correction has an aspheric surface.~~

Claim 25 (Currently Amended): A projection exposure apparatus according to claim 17, wherein the ~~correction part is formed by an~~ aspheric surface is formed by a mechanical process to transparent member's surface or formed by vacuum evaporation.

Claim 26 (Previously Presented): A projection exposure apparatus according to claim 17, wherein said transparent member is attached to the base through a frame.

Claim 27 (Previously Presented): A projection exposure apparatus according to claim 17, wherein the base and the transparent member are made of quartz or fluorite.

Claim 28 (Previously Presented): A projection exposure apparatus according to claim 27, wherein the quartz is a fluorite doped quartz.

Claim 29 (Previously Presented): A projection exposure apparatus according to claim 17, wherein said correction part is formed such that a ray emits to a proper optical path from each portion in the pattern.

Claim 30 (Previously Presented): A projection exposure apparatus according to claim 17, wherein the correction part is formed such that a distortion of an image of the pattern is reduced when the image of the pattern is projected by a projection optical system in an exposure apparatus when said mask is installed into the exposure apparatus.

Claim 31 (Currently Amended): A projection exposure apparatus comprising a projection optical system for projecting, onto an object to be exposed, a pattern formed on a surface of a mask that includes, at a side of the surface, a transparent member and a correction part for reducing an error of an image of the pattern projected on the object caused by errors in the pattern ~~correcting a change in an optical path of the transparent member, wherein the correction part corrects a writing error of the pattern.~~

Claim 32 (Currently Amended): A projection exposure apparatus comprising a projection optical system for projecting, onto an object to be exposed, a pattern formed on a surface of a mask that includes, at a side of the surface, a transparent member and a correction part that has an aspheric surface for reducing a fluctuation of an optical path of light from the pattern to the object, the fluctuation being caused by a deformation ~~corrects a change in an~~

~~optical characteristic due to a transformation of the transparent member.~~

Claim 33 (Currently Amended): A projection exposure apparatus comprising a projection optical system for projecting, onto an object to be exposed, a pattern formed on a surface of a mask that includes, at a side of the surface, a transparent member and a correction part that has an aspheric surface at least one of incident and exit planes, the aspheric surface for reducing an error of an image of the pattern projected on the object caused by errors in the pattern and/or for reducing a fluctuation of an optical path of light from the pattern to the object, the fluctuation being caused by a deformation of the transparent member ~~for correcting a change in an optical path of the transparent member, wherein the correction part is provided in the transparent member and corrects a writing error of the pattern.~~

Claim 34 (Canceled)

Claim 35 (Canceled)

Claim 36 (New): A device fabrication method comprising the steps of:
projecting a pattern on a mask onto a wafer by using a projection exposure apparatus;
and
developing said wafer to which said pattern was transferred;
wherein said projection exposure apparatus includes:

a mask stage for installing the mask, the mask including a substrate that has a pattern on one surface of the substrate, and a transparent member provided at the side of the one surface of the substrate, the transparent member having an aspheric surface;

an illumination optical system for illuminating the mask; and

a projection optical system for projecting the pattern on the mask illuminated by said illumination optical system, said mask stage and said illumination and projection optical systems being configured such that the pattern on the mask may be projected.

Claim 37 (New): A device fabrication method comprising the steps of:

projecting a pattern on a mask onto a wafer by using a projection exposure apparatus;

and

developing said wafer to which said pattern was transferred;

wherein said projection exposure apparatus including a projection optical system for projecting, onto an object to be exposed, a pattern formed on a surface of a mask that includes, at a side of the surface, a transparent member and a correction part for reducing an error of an image of the pattern projected on the object caused by errors in the pattern.

Claim 38 (New): A device fabrication method comprising the steps of:

projecting a pattern on a mask onto a wafer by using a projection exposure apparatus;

and

developing said wafer to which said pattern was transferred;

wherein said projection exposure apparatus includes a projection optical system for projecting, onto an object to be exposed, a pattern formed on a surface of a mask that includes, at a side of the surface, a transparent member and a correction part that has an aspheric surface for reducing a fluctuation of an optical path of light from the pattern to the object, the fluctuation being caused by a deformation of the transparent member.

Claim 39 (New): A device fabrication method comprising the steps of:
projecting a pattern on a mask onto a wafer by using a projection exposure apparatus;
and

developing said wafer to which said pattern was transferred;
wherein said projection exposure apparatus includes a projection optical system for projecting, onto an object to be exposed, a pattern formed on a surface of a mask that includes, at a side of the surface, a transparent member and a correction part that has an aspheric surface at least one of incident and exit planes, the aspheric surface for reducing an error of an image of the pattern projected on the object caused by errors in the pattern and/or for reducing a fluctuation of an optical path of light from the pattern to the object, the fluctuation being caused by a deformation of the transparent member